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# Partridge Creek Allotment Authorization Project Draft Environmental Assessment

Williams Ranger District, Kaibab National Forest, Coconino County, Arizona  
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**Partridge Creek Allotment Authorization Project  
Draft Environmental Assessment  
Williams Ranger District, Kaibab National Forest  
Coconino County, Arizona**

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**<https://www.fs.usda.gov/project/?project=56955>**

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**Note about document:** For consistency of this document, "Partridge Creek Allotment", "allotment" and "project area" all have the same meaning.

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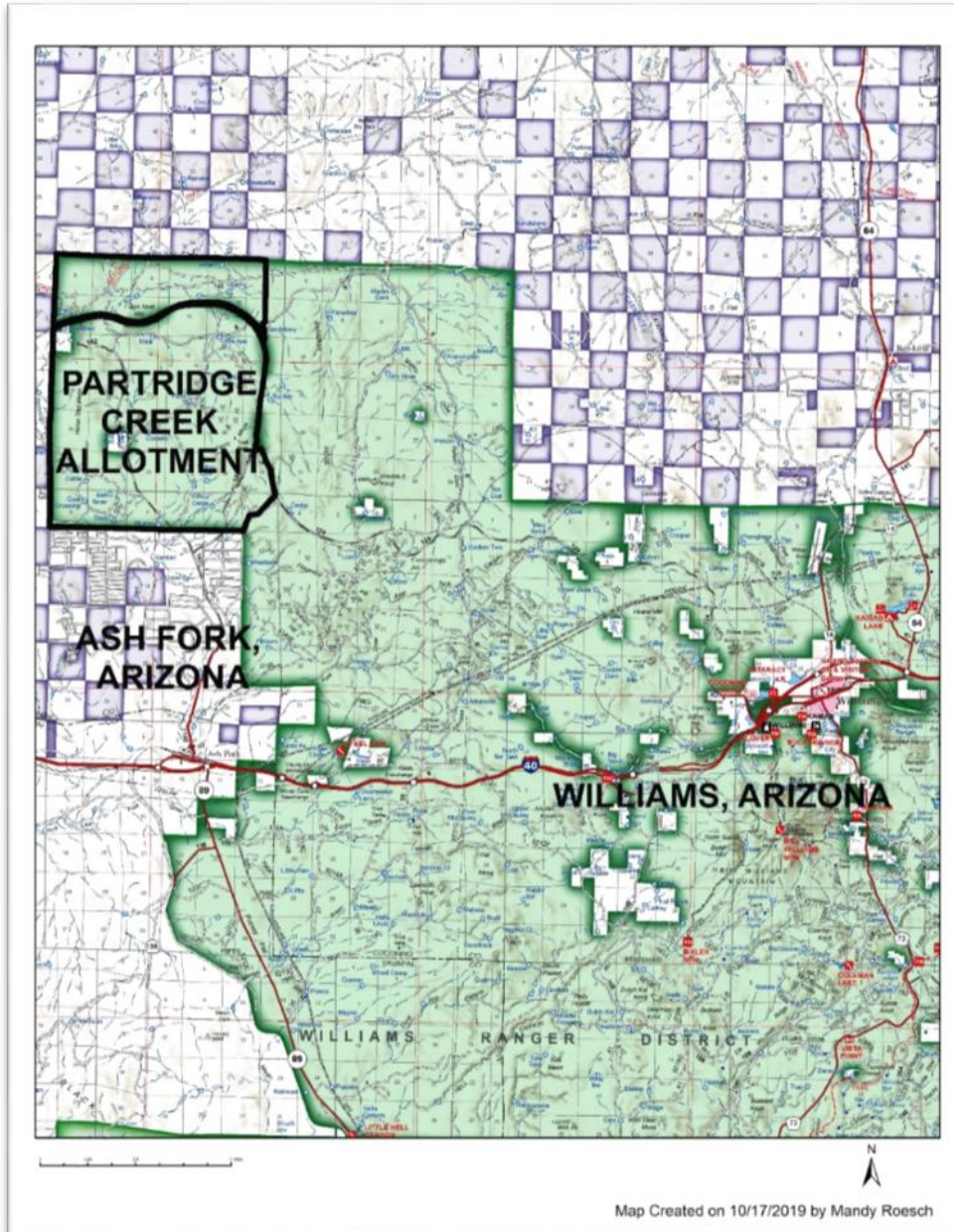
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# Project Location

Partridge Creek Allotment is located six miles north of the town of Ash Fork, on the Williams Ranger District of the Kaibab National Forest (NF).



**Figure 1:** Vicinity map for Partridge Creek Allotment

## Forest Plan Consistency

This Environmental Assessment is based on background information about the allotment including current and past rangeland inventory and monitoring data. The desired conditions for resources on the allotment were derived from the Kaibab National Forest (NF) Land and Resource Management Plan (Forest Plan) (USDA-2014). You can find the Forest Plan, and related documents at

<https://www.fs.usda.gov/detail/kaibab/landmanagement/planning/?cid=stelprdb5106605>.

The Forest Plan provides guidance for the management of multiple-use activities that occur within the Kaibab NF. Objectives, standards and guidelines related to the desired conditions for affected resources have been used to develop and analyze the proposed action and alternatives. Grazing is one of the many uses allowed on the Forest. Forest Service policy is to contribute to the economic and social wellbeing of people by providing opportunities for economic diversity and by promoting stability for communities that depend on range resources for their livelihood while managing rangeland vegetation to protect...resources, provide for ecological diversity, improve or maintain environmental quality and meet public needs for interrelated resource uses (Forest Service Manual (FSM)2202.1)). The proposed action is consistent with the Forest Plan Livestock Grazing Desired Conditions and Guidelines as well as the above information direction from the FSM 2202.1. Resource specific desired conditions are discussed in further detail in the *Environmental Effects* section of this document.

## Purpose and Need

The purpose of this project is to determine whether to continue to authorize livestock grazing, and if so, how to implement this while ensuring livestock management activities are consistent with other resource desired conditions on National Forest System lands as stated in the Forest Plan (USDA-2014). There is a need to adjust the permitted season of use and grazing strategy to allow for increased flexibility for livestock management on the allotment. There is also a need to construct additional water facilities to increase flexibility in addressing future drought concerns. This project would allow the Forest Service and the livestock producer to use adaptive management for changing resource conditions or management objectives while being in compliance with Forest Service Policy (Forest Service Handbook (FSH) 2209.13 Chapter 90).

## Proposed Action and Alternatives

Mitigation measures associated with all action alternatives can be found in *Appendix A Mitigation Measures by Resource* of this document. The no action alternative and the proposed action alternative were considered in detail during this analysis. The current management alternative does not meet the purpose and need for this project and therefore is not analyzed in further detail. An alternative was proposed during scoping to reduce utilization to 15-20% or less. This alternative was not analyzed in further detail. Both the current management and the reduction in utilization is discussed in more detail in the *Alternatives Eliminated from Detailed Study* section of this document.

## No Action (No Grazing)

No action, or no permitted livestock grazing, is included as an alternative in this analysis to provide an environmental baseline against which the effects of the other alternatives may be compared (FSH 2209.13, Ch. 90). Under this alternative, grazing operations would not be

authorized and use of the allotments by domestic livestock would be discontinued. Permittees would be given one year from the date of the decision to remove livestock from the allotments.

Selection of this alternative would not mean that livestock grazing could not be authorized on this allotment sometime in the future. Existing structural improvements would remain in place but would not be maintained. Improvements contributing to resource protection or enhancement, such as water developments important for wildlife, would be maintained, where feasible, using other program funds. When feasible, periodic inspection of structural improvements would be used to determine whether maintenance or removal is needed. Where necessary, maintenance of allotment boundary fences would be reassigned to adjacent permittees.

## Proposed Action

Kaibab NF proposes to authorize livestock grazing on the Partridge Creek Allotment under the parameters identified in Table 1 below. The permit holder would assume financial responsibility for construction and maintenance of proposed improvements.

**Table 1: Proposed specifications for livestock authorization on Partridge Creek Allotment.**

<b>Proposed Action</b>	<b>Details</b>	<b>Change From Current Management</b>	<b>Number of Acres Impacted by Construction of New Structural Improvements</b>
Permitted Animal Unit Months (AUMs)	Up to 1,904	None	N/A
Season of Use	October 15-May 31	Extension of 47 days	N/A
Permitted Number of Head*	252 cattle for full season of use	None	N/A
Grazing System	Continuous, deferred rotation, rest rotation or a combination of any of these	More options for grazing systems	N/A
Forage Utilization Guideline	Conservative level of utilization (30-40%)	None	N/A
Seasonal Utilization Guideline	Conservative level of seasonal utilization (30-40%)	None	N/A
Expansion of Holding Facility	Approximately 1 mile of new fence construction expanding the existing holding facility by	New construction	Approximately 2 Acres

<b>Proposed Action</b>	<b>Details</b>	<b>Change From Current Management</b>	<b>Number of Acres Impacted by Construction of New Structural Improvements</b>
	approximately 100 acres		
New Pipeline Construction	Approximately 2 miles of buried OR surface pipeline	New construction	Approximately 8 Acres
New Troughs	3 new troughs located in South Pasture	New construction	Approximately 1.5 Acres
New Earthen Stock Ponds	1 in Little Aso Pasture; 1 in Big Aso Pasture	New construction	Approximately 6 Acres
New Trick Tank	1 new trick tank in South Pasture	New construction	Approximately 3 acres

*\*This number can be adjusted based on actual season of use and current conditions but would not exceed permitted AUMs.*

## **Adaptive Management**

Adaptive management uses documented results of management actions (monitoring) to continually modify management in order to achieve specific objectives including but not limited to, maintaining or moving towards desired conditions as stated in the Forest Plan (USDA-2014). Adaptive management would be tied strongly to the Drought Management Strategy, which is described in the following section. Management results would be assessed with site-specific, short-term inspections, and could also be evaluated with long-term monitoring identified in the Forest Plan. The short-term inspections would focus on annual evaluation of rangeland vegetation, such as forage production or utilization, adequate function of allotment improvements, such as water developments and fencing, and annual assessment of weather-related variables that would inform drought conditions, like the Standardized Precipitation Index (SPI). The long-term monitoring would be tied to the Forest Plan measurements of the relative composition and cover of grasslands (LRMP page 135). The Forest Plan monitoring would be conducted across a larger landscape with random site selection, which may only assess a subset of allotments and may or may not include the Partridge Creek Allotment.

Adaptive management provides the flexibility to adjust livestock numbers and timing of grazing so that use is consistent with current productivity and is meeting management objectives. Under the adaptive management strategy, the specific number of livestock authorized, specific dates for grazing, class of animal and modifications in allotment use may be administratively modified as determined to be necessary and appropriate based on programmatic monitoring. Administrative changes would be documented and implemented in the Annual Operating Instructions (AOIs) which is made part of the term grazing permit. Adaptive management also includes monitoring and analysis to determine whether identified structural improvements are necessary or need to be modified.



In the case that changing circumstances require structural improvements or management actions not disclosed or analyzed herein, further interdisciplinary review would occur. The review would consider the changed circumstances and site-specific environmental effects of the improvements in the context of the overall project. Based on the results of the interdisciplinary review, the Deciding Official would determine whether correction, supplementation or revision of the EA is necessary in accordance with FSH direction at FSH 1909.15(18) and FSH 2209.13(96.1), or whether further analysis under NEPA is required.

## **Drought Management Strategy**

Drought is an inevitable occurrence in the southwestern United States (USDA-2015a). Land managers and grazing permittees must plan for drought as a normal part of management and business. The SPI is a unit of measure that compares recent precipitation values for a period of interest with long-term historical values to assess moisture conditions in a given area. In the Southwestern Region, anytime the SPI reaches a value of minus 1.00 or less for the preceding 12-month period, grazing allotments should be evaluated for existing drought conditions.

The Forest considers a diversity of factors when devising management actions on the National Forests in the Southwestern Region in response to drought. Such factors include species diversity, past grazing use, timing of grazing, intensity of management, and conditions of improvements to support grazing activities. These factors along with precipitation data provide flexibility to the line officer to make decisions based on recommendations from district specialists. Rangeland management specialists use direction provided in the Region 3 Supplement to FSH 2209.13, the Grazing Permit Administration Handbook, and 12-Month SPI to assess soil and vegetation conditions. Using the SPI as a baseline and combining it with site-specific information from allotment inspections and monitoring data, range specialists can make a determination for necessary management actions and review adaptive management alternatives to determine the best course of action.

Region 3 and Kaibab NF drought management policies identify numerous adaptive management actions for mitigating grazing effects during drought. The following are examples of management actions that could be used on the Partridge Creek Allotment during periods of drought:

1. Reduce authorized AUMs (livestock numbers). Reductions may be necessary prior to the permitted season of use and/or during the permitted season of use
2. Shorten season of use. Depending on the severity of the drought and authorized AUMs, a reduced grazing season may be necessary
3. Shorten pasture use periods
4. Lack of livestock water, or poor distribution of livestock water, may result in reduced pasture/allotment use periods
5. Pastures would only be grazed once during the same grazing season and this may ultimately result in an early exit from the Partridge Creek Allotment
6. Pastures may need complete rest from livestock use. Pasture resting periods would depend on the severity of the drought. Livestock use of planned rested pastures due to drought would not be authorized
7. Reduce forage utilization and/or seasonal utilization levels. Depending on the severity of the drought and the authorized AUMs, reduced forage utilization and/or seasonal

utilization levels would likely result in shortened pasture use periods and may ultimately result in an early exit from the Partridge Creek Allotment.

## Alternatives Eliminated from Detailed Analysis

### **Continue Current Management:**

Under this alternative, there would be no change in allotment management. As permits expire, new permits would be issued for the classes and numbers of livestock currently permitted. Annual authorization use would continue to be controlled through annual AOIs. None of the proposed improvements would be implemented, but existing improvements would be maintained. This alternative was not analyzed in detail because it does not meet the purpose and need for the project to manage resources in a manner that achieves Forest Plan (USDA-2014) objectives and desired conditions, nor does it formally incorporate adaptive management to allow for sufficient management flexibility.

### **Reduce Utilization to 15-20%(or less):**

An alternative to decrease Animal Unit Months (AUMs) or utilization, which was recommended in public comments, has not been analyzed in detail. Under this alternative, there would be a reduction in utilization from the current conservative levels of 30-40% to 15-20%. An alternative with a guideline of 15% utilization levels for solely livestock was not analyzed because it does not meet the purpose and need for the project to meet the Forest Plan desired conditions of ensuring livestock management activities are consistent with other resource desired conditions on National Forest System lands.

In Galt, et al. (2000), a 25 % utilization guideline is recommended for livestock, with 25% allocated for wildlife and natural disturbance, and the remaining 50% left for site protection. Wildlife use is included within the forage utilization guideline of 30-40%. This guideline allows for 60-70% of annual forage production to be available at the end of the growing season for site protection which exceeds the Galt, et al. recommendation. During the growing season, the grazing intensity guidelines maintain forage on site to reproduce, grow to maturity, build necessary root mass, produce seed heads, produce litter important to nutrient cycling, and propagate and move into new areas.

## Environmental Effects

This section summarizes the potential impacts of the proposed action and alternatives for each resource listed below. There has been no unauthorized grazing use in the Partridge Creek Allotment, and thus, there are no cumulative impacts to be considered with unauthorized grazing. Watershed-scale cumulative impacts are addressed in the *Soils and Watershed* subsection of this Environmental Effects section of this EA as well as in the Soils and Watershed Specialist Report (Kiesow, 2019 pg. 15). One of the scoping comments the Kaibab NF received had literature cited. This literature is being reviewed by the Interdisciplinary Team.

Monitoring for the various resources would be in compliance with the Forest Plan monitoring protocol as stated in the Forest Plan (USDA-2014, Pages 123-154). Prior to adaptive management being implemented, District specialists would be notified of any changes to management. With implementation of the drought management strategy, resource impacts would not increase during dry years, and would be similar to impacts already described and disclosed in this analysis.

All specialist reports and their associated literature cited are incorporated by reference and are available at the Williams Ranger District office upon request. For cumulative effects the resource specialist considered these types of actions:

- Fuels Reduction (Prescribed Fire)
- South Zone Grassland Restoration Project (Vegetation Treatments)
- Treatment of Invasive Species
- Recreation
- Off Highway Vehicle Use
- Wildlife use
- Incidental use by wild burros

## Botany and Noxious Weeds

Field surveys and geographic and habitat analysis were conducted to assess the potential for federally listed Threatened and Endangered plant species (listed species), Forest Service Sensitive plant species, and restricted and narrow endemic plant species (“rare plants”) to occur in the Partridge Creek Allotment. Similar methods were used to assess the presence of noxious weed species and their capacity to establish and spread in this area.

Using United States Fish and Wildlife Service (USFWS) data and associated habitat analysis, it was found that no federally listed plant species had known habitat in the project area, and that it was highly unlikely for any listed plant species to occur in the project area. Two Forest Service Sensitive species, Mt. Dellenbaugh sandwort (*Eremogone aberrans*) and Arizona phlox (*Phlox amabilis*), and one restricted-range species variety, Mat penstemon (*Penstemon caespitosus* var. *desertipicti*), were located in the allotment during field surveys in October 2019. It was determined that seven other rare plant species had the potential to occur in the project area based on habitat requirements and known geographic range.

These populations could experience adverse effects from activities associated with the proposed action such as grazing and trampling by cattle, ground disturbance by vehicles and equipment during construction of range improvements, and erosion and habitat degradation. Locations close to stock tanks would experience a higher degree of effect from grazing and trampling of livestock while other locations would experience minimal effects from disturbance.

One noxious weed species, cheatgrass (*Bromus tectorum*), is known to occur in the project area and the potential exists for other noxious weed species present on the Williams Ranger District and other nearby lands to occur there. Through activities associated with the proposed action such as, grazing and trampling by cattle, ground disturbance by vehicles and equipment during construction of range improvements, and erosion and habitat degradation associated with these activities, it is possible that existing populations may expand and that new populations may establish.

Survey and monitoring activities would be conducted by the South Zone Range and Botany personnel including periodic rangeland health monitoring, weeds surveys and rare plant population monitoring. The information gathered would allow adaptive management responses, such as changes to grazing systems, changes in period of use, or exclusion fencing of plant populations, which would serve to mitigate potential undesired effects on weeds and rare plants.

With mitigation measures and best management practices (BMPs) in place, effects from the proposed action and cumulative actions are not expected to result in downward trends in viability

of any plant species or the habitat within its geographic range on the Kaibab NF; nor are these species expected to trend toward listing as endangered species. Using mitigation measures and BMPs, the proposed action and cumulative actions are not likely to encourage establishment or spread of noxious weeds in the project area.

The no action alternative would likely have no effect or a beneficial effect on rare plant populations and their habitat in the project area by removing the pressure of grazing and trampling by livestock. Eliminating routine heavy disturbance by livestock around current stock tanks and pens (and additional construction-related disturbance) would allow reestablishment of desired vegetation and may make the allotment more resilient to invasion by weeds.

The proposed action is consistent with the Forest Plan's management approaches (USDA-2014, Pg. 52-54) for Forest Service Sensitive, restricted and narrow endemic, and nonnative invasive species. The Kaibab NF works with the USFWS and other partners to develop conservation measures to prevent listing of new species and to aid in the recovery and delisting of federally listed species. To effectively manage invasive species populations, the Kaibab NF coordinates with other agencies, grazing permittees, and adjacent landowners in efforts to educate the public and conduct weed survey, prevention and control activities.

## Heritage Resources

Analyses were conducted to determine potential effects to heritage resources as a result of the proposal to authorize livestock grazing on the Partridge Creek Allotment under newly developed parameters. Previous archeological surveys have inventoried 4,309 out of 24,622 acres (approximately 17.5%) of the Partridge Creek Allotment. Once the exact locations of the proposed fence, pipeline, trick tanks and multiple troughs are identified, Kaibab NF archeologists would need to complete a field survey for any unrecorded archeological sites and consult with the Arizona State Historic Preservation Office (AZSHPO) to ensure that there would be no adverse effects to any new sites found within the newly disturbed areas.

In the inventoried area, 331 archeological sites were documented within the Partridge Creek Allotment. Of the 331 sites within the allotment, site types include prehistoric artifact scatters, prehistoric habitational sites, prehistoric field houses/agricultural features, historic refuse areas, rock art, rock shelters and historic house foundations. No archeological sites have evidence of adverse effects as a result of past and ongoing livestock grazing. If any adverse effects to sites are observed, Kaibab NF archeologists would work with the range staff to develop and implement sufficient mitigation measures pursuant to Appendix H of the Standard Consultation Protocol for Rangeland Management to mitigate any adverse effects to sites. The proposed action is consistent with the Forest Plans management approach (USDA-2014, Pg. 60) for cultural resources because the Kaibab NF continues to work to identify, evaluate, and protect cultural resources.

Sites on National Forest System lands in Region 3 "have been subjected to grazing for hundreds of years, at levels much higher than current grazing practices;" therefore, many of the impacts to heritage resources from grazing have already occurred. The establishment of allotments and grazing management substantially decreased threats to heritage resources with large reductions in livestock numbers, regulations on time of year and the amount of time livestock can graze in particular areas. Adaptive management strategies and practices have greatly reduced the threat of adverse effects to sites from activities associated with grazing (USDA-2009).

With regards to the Partridge Creek Allotment, archeologists have not found any adverse effects during their past monitoring of grazing activities, and that the effects of any new improvements would be consulted upon with the AZSHPO to minimize effects to archeological sites, there

would be no measurable direct or indirect effects on any heritage resources as a result of the proposed action activities. The Kaibab NF is currently consulting with the AZSHPO under the Programmatic Agreement under a no adverse effect finding to any historic properties (Romero and Weintraub 2020; In Progress).

The no action alternative would have no measurable direct or indirect effects on any heritage resources.

In complying with Section 106 of the National Historic Preservation Act of 1966 as amended, Kaibab NF archeologists ensure that all Forest projects result in no adverse effects to heritage resources. Because of this, there would be no cumulative effects to heritage resources from any past, present or foreseeable future actions within/or from the area surrounding the Partridge Creek Allotment (Weintraub, 2019).

## Range

Existing and desired conditions for percent ground cover, number of perennial grass species and perennial grass canopy cover for Partridge Creek Allotment are discussed in the rangeland specialist report, and shown in Tables 10 and 11 of the Range Specialist Report. Of the 19 terrestrial ecosystem units (TEUs) on the allotment, existing and desired conditions were determined using monitoring data collected in six TEUs for ground cover and five TEUs for number of perennial grass species and perennial grass canopy cover, and comparing these data to values in the TES. Currently, all six TEUs meet desired conditions for vegetative ground cover; one TEU meets desired conditions for number of perennial grass species; and five TEUs meet desired conditions for perennial grass canopy cover.

For TEUs that are currently meeting desired conditions, the long-term goal is to maintain or improve this condition. For TEUs that are not currently meeting desired conditions, the long-term goal is to move towards desired conditions. If implementation of the selected alternative is not meeting or moving towards these desired conditions, adaptive management would be used to adjust grazing management in order to achieve these desired conditions.

The proposed action alternative would have effects to vegetation height, canopy cover, diversity, density, production and quality. The use of mitigation measures and adaptive management, and with favorable climatic conditions, these effects would be localized and temporary. New structural range improvements would increase water availability for livestock and wildlife. Increased water availability would allow for improved livestock management and improved dispersal of livestock and wildlife throughout the allotment; reducing effects to upland vegetation. The use of adaptive management would allow for changes in livestock management in response to climatic changes, changes with other resource management and changes in ranch management.

The degree of effect to the rangeland resources would be minimal due to the use of BMPs, adaptive management, following utilization and seasonal utilization guidelines, and increasing water availability on the allotment.

The degree to which the cumulative actions combined with livestock grazing would impact upland vegetation is minimal to moderate. The use of BMPs for all projects mitigates negative effects to upland vegetation resulting in minimal impacts. Under favorable climatic conditions upland vegetation is expected to recover within one to two growing seasons once projects are completed, resulting in minimal impacts to upland vegetation. Some projects (restoration, weed



treatments) may initially result in an impact to upland vegetation, but the long term impact would be beneficial to this resource is expected to have a moderate impact.

The no action alternative would result in no effects to vegetation height and canopy cover, but would have an effect to vegetation diversity, density, production and quality. Existing range improvements would not be maintained, reducing water availability for wildlife and creating wildlife hazards.

The proposed action alternative meets the Forest Plan direction, “There are opportunities to engage in ranching activities and graze livestock NFS lands. These activities contribute to the stability and social, economic, and cultural aspects of rural communities” (USDA-2014). This action is in compliance with all regulations and policies for rangeland resources (Roesch, 2019).

## Soils and Watershed

Soil and watershed resources were analyzed to determine effects of a no action alternative and a proposed action alternative for the Partridge Creek Allotment Livestock Authorization Project. Soil condition was analyzed based on key indicators that would be affected by project activities. These indicators relate directly to soil condition and include soil disturbance, soil compaction and soil nutrient cycling/ground cover. The Watershed Condition Framework (WCF) was used to evaluate watershed scale existing conditions in this report. Six of the twelve watershed indicators (as outlined in the WCF) have the potential to be affected by project activities and were assessed within this report. Those six indicators include; water quality, water quantity, riparian/wetland vegetation, soil condition, rangeland vegetation and terrestrial invasive species. No riparian or wetland vegetation is documented within the Partridge Creek Allotment, and thus, there are no impacts to be considered for riparian or wetland resources.

Satisfactory soil conditions exist across the majority of the allotment. Impaired and unsatisfactory soil conditions generally occur on 1) steep slopes, 2) areas with high pinyon/juniper canopy cover, 3) areas with shallow soil and 4) areas close to stock tanks. The majority of Murray Trap pasture consists of impaired and unsatisfactory soil conditions.

**Table 2:** Partridge Creek Allotment Soil Condition

<i><b>Soil Condition</b></i>	<i><b>Acres* (USFS Acres)</b></i>	<i><b>Percent of Allotment (USFS)</b></i>
<i><b>Satisfactory</b></i>	<i><b>19,425</b></i>	<i><b>79</b></i>
<i><b>Impaired</b></i>	<i><b>3,391</b></i>	<i><b>14</b></i>
<i><b>Unsatisfactory</b></i>	<i><b>1,851</b></i>	<i><b>7</b></i>

*\*Acres are produced from geospatial information and account only for USFS lands. Geospatial information and accuracy may vary, acres are approximate.*

The Partridge Creek Allotment project area intersects five subwatersheds (Hydrologic Unit Code (HUC) level 12 watersheds). One of the subwatersheds, Eightmile Creek, encompasses 84 acres of the allotment and will not be included in this assessment due to the small number of acres that exist on Forest Service lands. The primary factors affecting watershed conditions across the project area include; occurrences of quarries and cinder pits, lack of road maintenance, road placement near drainages and unsatisfactory soil conditions.

**Table 3:** Watershed Summary for the Partridge Creek Allotment

<b>Watershed Name</b>	<b>Hydrologic Unit Code (HUC 12)</b>	<b>Condition Rating</b>	<b>Condition Summary</b>	<b>Acres</b>	<b>Acres within Project Area</b>
Big Aso Tank	150602010405	Functioning at Risk	Low road maintenance; cinder pits and quarries present.	28,741	10,750
Bunker Tank	150602010404	Functioning at Risk	Unsatisfactory soils in watershed; high road density; low road maintenance; many roads near water courses.	8,596	4,987
Flagstone Tank-Partridge Creek	150602010406	Functioning Properly	Low road maintenance; many roads near water courses.	19,742	4,463
Garden Tank-Partridge Creek	150602010407	Functioning at Risk	Unsatisfactory soils in watershed; low road maintenance; cinder pits and quarries.	22,794	4,728

The proposed action alternative would affect soil condition through soil disturbance, soil erosion, soil compaction, and reduced nutrient cycling/ground cover across the project area where livestock concentrations occur. These effects would be minor across the majority of the allotment area from livestock grazing. There would be short term minor effects to soil condition from construction of the proposed water improvements and fence line. There would be long term localized effects to soil condition around proposed and existing stock tanks, troughs and trick tanks.

Managed livestock grazing would increase sediment delivery to stream courses and water bodies and increase nutrient concentrations in surface waters (stock tanks). These effects would be minor in regard to water quality due the high amount of ephemeral drainages, low gradient and lack of perennial water. Proposed range improvements would not alter the physical, chemical or biological components of water quality. The construction of stock tanks in drainages would directly affect natural flow regimes by retaining water and sediment at those locations. The amount of water that would be retained is negligible at the sub-watershed scale.

The geographic setting for the cumulative effects analysis for soils and watersheds includes all of the 6th-level (HUC12) hydrologic unit watersheds where the Partridge Creek Allotment is located. The degree to which the cumulative effects would impact soils and watersheds in conjunction with the proposed action is minor at the subwatershed scale (Kiesow, 2019 pg. 15).

With the no action alternative, soil condition would improve over time in areas where high use from livestock (i.e. areas near stock tanks and livestock trails) currently occur, but no longer would under the no action alternative. Impaired and unsatisfactory soil conditions that occur on steeper slopes, in areas with high pinyon/juniper canopy cover and areas with shallow soil would continue to exist.

Watershed condition would remain unchanged as a result of the no action alternative as the primary factors affecting watershed condition (i.e. occurrences of quarries and cinder pits, lack of road maintenance, road placement near drainages and unsatisfactory soil conditions) would continue to occur across the project area.

The proposed action alternative would comply with Forest Service direction, Kaibab NF Forest Plan standards and guidelines and all state and federal regulations affecting soil and watershed resources as described in the “Relevant Laws, Regulations and Policy” document on the project website where ongoing efforts used to control adverse effects of livestock grazing are implemented. These include forage utilization guidelines, controlling livestock distributions, monitoring of rangeland conditions and BMPs. Where these methods are utilized properly, adverse effects to soil and water resources are minimized and/or are mitigated (Kiesow, 2019).

## Wildlife

Using the Partridge Creek Allotment boundary, the potential for Endangered, Threatened, Candidate, and Conservation Agreement species, and Critical Habitat was determined considering habitat, elevation, and geographic distribution of each species as well as the USFWS Information for Planning and Conservation (IPAC) online system. California condors were determined to be potentially in the project area by IPAC on November 18<sup>th</sup>, 2019; the proposed action would not jeopardize the continued existence of the species. The Yellow-billed Cuckoo and Northern Mexican garter snake were also identified by IPAC as potential species but no habitat exists in the project area for either species. Forest Service Sensitive species were also considered with the Bald Eagle, American peregrine falcon, Spotted Bat, Allen’s lappet-browed bat and Pale Townsend’s big eared bat, determined to be species which could occur in the project area and have potential to be affected by the proposed action

Livestock grazing has a wide range of direct and indirect effects on ecosystem structure and function on wildlife and its associated habitat (e.g., see literature reviews in Kauffman and Krueger 1984, Fleischner 1994, Severson and Urness 1994, Saab et al. 1995, Belsky and Blumenthal 1996, Milchunas 2006). The primary effects of livestock grazing on wildlife habitat are the direct and indirect effects associated with repeated reductions in understory vegetation (cover/density/biomass/frequency) due to grazing and trampling by livestock. This results in reduced food resources available for a wide variety of invertebrate and vertebrate species that eat plant parts (leaves, flowers, fruits, seeds) and reduced cover for a wide variety of invertebrate and small vertebrate species (e.g., lizards, snakes, ground-nesting birds, small mammals). Cover provided by both live herbaceous vegetation as well as the herbaceous litter layer is reduced by livestock grazing. Reduced cover can negatively affect microhabitat conditions for some of these species and potentially results in increased predation risk.

Although livestock grazing affects wildlife habitat, the existing current environmental baseline within the Partridge Creek Allotment is a landscape that has been continuously grazed by livestock for approximately 130 years. Numbers of livestock grazed today on the Partridge Creek

Allotment and throughout the western U.S. are a fraction of numbers grazed during the late 1800s and early 1900s (Milchunas 2006). Many of the greatest ecological impacts of livestock grazing (e.g., severe erosion and loss of palatable forage species) likely occurred by the early 1900s (Milchunas 2006), since then rangeland management in the National Forest system has adjusted its practices to mitigate the effects and reduce the overall level of impact associated with livestock grazing. Effects to wildlife habitat across the project boundary would be marginal due to utilization levels remaining conservative at 30-40%.

The project area does not overlap with any zones for the Mexican Gray Wolf Experimental Population area, and thus, there are no impacts to be considered for the Mexican Gray Wolf. Also, no bighorn sheep or their habitat are present in the project area, and thus, there are no impacts to be considered for bighorn sheep.

While past, present and reasonably foreseeable future actions might have some cumulative effects to species analyzed in the Specialists Report, those effects would not result in jeopardizing the continued existence, trend towards listing or loss of viability of any of these species.

It is determined that the proposed action would not adversely affect the above mentioned species and would not result in a trend toward Federal listing or loss of viability for any Forest Service Sensitive, rare, or narrow endemic wildlife species. Nor would implementation of the proposed action result in measurable negative effects to migratory bird populations. Further, any negative effects to these species as a result of implementation of the proposed action, direct or indirect, are largely the result of reduction in biomass caused by grazing. It is the specialist's determination that these effects are negligible to these species and their habitat due to conservative utilization levels of 30%-40% and is analyzed in further detail in the Wildlife Specialist Report (Largent, 2019).

The proposed action is consistent with the Forest Plans management approach (USDA-2014, Pg. 50) for wildlife because the Kaibab NF strives to create and maintain natural communities and habitats in the amounts, arrangements, and conditions capable of supporting viable populations of existing native and desired nonnative plant, aquatic, and wildlife species within the planning area while contributing broader landscape-scale initiatives where appropriate. The Williams Ranger District would continue to meet desired conditions for wildlife as stated in the Forest Plan (USDA-2014).

Under the No Action Alternative, herbaceous and shrubby vegetation would likely increase, resulting in increased habitat quality for the above mentioned species, with exception of the burrowing owl. Under the no action alternative, habitat quality may decrease slightly for burrowing owls because they select areas with bare ground and bare ground would likely decrease under this alternative. Saab et al. (1995) concluded that livestock grazing favors burrowing owl habitat.

## **Public Involvement**

Planning for the Partridge Creek Allotment Authorization Project began in October of 2019. The project first published on the Forest Service Schedule of Proposed Actions (SOPA) on October 1, 2019. In October of 2019, a District interdisciplinary team met to develop the proposed action and identify preliminary issues, concerns and measures to carry forward into the analysis. The proposed action was released for a 14-day public scoping period with a letter dated November 1, 2019.

The Kaibab NF received three comment letters during the scoping period. Public comments were received about proposed allotment use compared with actual past use, drought associated with climate change, pasture rest and financial responsibility for proposed allotment improvements, which are addressed in the proposed action section of this EA. Public comments were received regarding watershed-scale cumulative effects, cumulative impacts of unauthorized grazing use and impacts of the proposed action on riparian areas and federally-listed threatened or endangered species, which are evaluated in the Environmental Effects section of this EA, as well as the individual resource specialist reports which are referenced. Additional information regarding public comments and agency responses to those comments can be found in the document *Response to Comments*, which is available on the project website (<https://www.fs.usda.gov/project/?project=56955>).

The Tribal Relations Liaison for the Kaibab NF stated in an email dated December 4, 2019, the project listing on the SOPA was the primary method used to initiate tribal consultation. No further need for tribal consultation has been identified.

## Agencies and Persons Consulted

Informal or formal consultation with the USFWS was not required for this project because the effects determination for the California condor is not likely to jeopardize the continued existence of the species. The experimental population<sup>1</sup> of California condors is located within the project area. For the purposes of consultation requirements, nonessential experimental populations receive the same treatment as species proposed for listing. Consequently, the Forest Service must “confer” with (Secretary of the Interior or Commerce) USFWS in accordance with requirements for proposed species (FSM 2671.45b).

Arizona Game and Fish Department was consulted on October 6, 2019 to determine an estimated number of elk present in Game Unit 10.

As stated above, the Kaibab NF conducted tribal consultation and found that there was no further need to consult on this project.

## Interdisciplinary Team

Name	Position/ Role
Amanda Roesch	Team Lead; Rangeland Management Specialist
Victoria Payne	Co-Team Lead; NEPA; Writer/Editor
Neil Weintraub	Archaeology
Travis Largent	Wildlife Biologist
Micah Kiesow	Soil Science and Watershed Conservation
Jesse Duff-Woodruff	Botany and Invasive Species (Weeds)
Mike Lyndon	Tribal Relations Liaison
Mark Christiano	GIS

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<sup>1</sup> Experimental populations are those populations of threatened and endangered species so declared by the Secretary of the Interior, which are wholly separate geographically from naturally occurring populations of the same species. Experimental populations are exempt from the full protective measures of the Endangered Species Act of 1973, as amended, in order to encourage reintroductions of listed species and experimental approaches to accelerate recovery (FSM 2671.43).



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# Appendix A: Mitigation Measures by Resource

## Botany and Noxious Weeds:

- Botany and noxious weeds would be surveyed for prior to proposed improvements being installed.

RANGE MANAGEMENT	
Grazing	
RM-1. Consider weed prevention and control practices in the management of grazing allotments.	<p>1.1 – Include weed prevention practices, inspection and reporting direction, and provisions for inspection of livestock concentration areas in allotment management plans and annual operating instructions for active grazing allotments.</p> <p>1.2 – For each grazing allotment containing existing weed infestations, include prevention practices focused on preventing weed spread and cooperative management of weeds in the annual operating instructions. Prevention practices may include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Maintaining healthy vegetation</li> <li>• Preventing weed seed transportation</li> <li>• Minimize potential ground disturbance - altering season of use or exclusion</li> <li>• Weed control methods</li> <li>• Revegetation</li> <li>• Inspection and Monitoring</li> <li>• Reporting</li> <li>• Education</li> </ul>
RM-2. Minimize transport of weed seed into and within allotments.	<p>2.1 – If livestock are potentially a contributing factor to seed spread, schedule units with existing weed infestations to be treated prior to seed set before allowing livestock on those units. Schedule these infested units to be the last in the rotation.</p> <p>2.2 – If livestock were transported from a weed-infested area, corral livestock with weed-free feed, and annually inspect and treat allotment entry units for new weed infestations.</p> <p>2.3 – Designate pastures as unsuitable range to livestock grazing when infested to the degree that livestock grazing will continue to either exacerbate the condition on site or contribute to weed seed spread.</p>
RM-3. Maintain healthy, desirable vegetation that is resistant to weed establishment.	<p>3.1 – Through the allotment management plan or annual operating instructions, manage the timing, intensity (utilization), duration, and frequency of livestock activities associated with harvest of forage and browse resources to maintain the vigor of desirable plant species and retain live plant cover and litter.</p>

	3.2 – Manage livestock grazing on restoration areas to ensure that vegetation is well established. This may involve exclusion for a period of time consistent with site objectives and conditions. Consider practices to minimize wildlife grazing on the areas if needed.
RM-4. Minimize ground disturbances.	4.1 – Include weed prevention practices that reduce ground disturbance in allotment management plans and annual operating instructions. Consider for example: changes in the timing, intensity, duration, or frequency of livestock use; location and changes in salt grounds; restoration or protection of watering sites; and restoration of yarding/loafing areas, corrals, and other areas of concentrated livestock use. 4.2 – Inspect known areas of concentrated livestock use for weed invasion. Inventory and manage new infestations.
RM-5. Promote weed awareness and prevention efforts among range permittees.	5.1 – Use education programs or annual operating instructions to increase weed awareness and prevent weed spread associated with permittees' livestock management practices. 5.2 – To aid in their participation in allotment weed control programs, encourage permittees to become certified pesticide use applicators.

### Cultural Resources:

- If any adverse effects to sites are observed, Kaibab NF archeologists would work with range staff to develop and implement sufficient mitigation measures pursuant to Appendix H of the Standard Consultation Protocol for Rangeland Management to mitigate any adverse effects to sites.
- Once exact locations of the proposed improvements are identified, archaeological surveys would be conducted.

### Soils and Watershed:

- The following BMPs would be followed.

BMP #	Mitigation	Purpose
BMP 1	Manage forage utilization by livestock to maintain healthy ecosystems for all resource objectives.	Safeguard water and soil resources under sustained forage production.
BMP 2	Several techniques are used to achieve proper distribution or lessen the impact on areas which are sensitive or which would naturally be overused. These techniques include: a. Construction of fences, and implementation of seasonal or	To manage sustained forage production and forage utilization by livestock while protecting soil and water resources. Maintaining healthy ecosystems for wildlife and other resources.

	<p>pasture systems of management.</p> <p>b. Water development in areas that receive little use and closing off water developments when proper use has been achieved.</p> <p>c. Riding and herding to shift livestock locations.</p> <p>d. Using salt or supplement feed as tools to gain proper distribution of livestock.</p> <p>e. Range improvements, prescribed burning, trail construction, or seeding.</p> <p>f. Prevention of intensive livestock grazing or concentrated livestock use on soils that have low bearing strength and are wet.</p> <p>Developing sufficient watering places is one way to limit the amount of trailing.</p> <p>Livestock distribution needs are determined through evaluations of range conditions and trends, including utilization studies.</p>	
BMP 3	<p>Soil condition class is determined by qualified soil scientists using Terrestrial Ecosystem Survey. A range conservationist would use the soil condition class in determining the grazing capacity.</p>	<p>This practice is an administrative and preventative control. Soil condition classes is used to determine grazing capability. Only land with soils in satisfactory condition are considered as "full capability" range. Grazing capability ratings are then used in conjunction with other grazing considerations to determine the actual grazing capacity of an area.</p>
BMP 4	<p>Where soil has been severely disturbed by past overgrazing and the establishment of vegetation is needed to minimize erosion, the appropriate measures shall be taken to establish an adequate cover of grass or other vegetation acceptable to the</p>	<p>To establish a vegetative cover on disturbed sites to prevent accelerated erosion and sedimentation.</p>



	Forest Service and outlined in the allotment management plan. This measure is applied where it is expected that disturbed soils in parts of the area would require vegetative cover for stabilization and the problems would not be mitigated by other management plan provisions.	
BMP 5	Rangeland improvements are intended to enhance forage quality, quantity, and/or availability, and to provide protection to the other resources. Building fences to control the movement of livestock, improve watershed condition, and develop watering sites are just a few of the types of rangeland improvements implemented by the permittee or Forest Service as identified in the allotment plan. If a structure is causing soil erosion or water quality degradation, the allotment plan <i>would</i> identify it and state corrective measures. Other measures may include stream channel stabilization efforts such as riprapping, gully plugging, and planting; or mechanical treatments such as pitting, chiseling, or furrowing. Reseeding and/or fertilization may be done alone or in conjunction with any of these measures	To improve, maintain or restore range resources, including soil and water through the use of rangeland improvements.
BMP 6	During allotment improvement work (earthen stock ponds, pipelines, fences, etc.) do not operate equipment when ground conditions are such that soil rutting, compaction or puddling can occur.	Mitigate adverse impacts to soil (compaction, puddling, disturbance).